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PARTICLE ACCELERATION AND TRANSPORT IN HELIOSPHERE

Abstract content

Gradual solar energetic particle (SEP) events is a major space hazard. In these events, energetic particles (protons and heavy ions) are accelerated at propagating CME-driven shocks, reaching energies as high as ˜1 GeV/nucleon. Understanding the acceleration and transport of these particles in the inner heliosphere is an active research in space physics. Observationally, a tremendous amount of data (including those of remote sensing such as X-ray, gamma-ray, white light, UV, radio observations and those of in-situ measurements such as particle composition, time intensity profiles and particle spectra) has been accumulated over the past several decades. However, modeling efforts have been lacking behind. Recently, we have developed a Particle Acceleration and Transport in Heliosphere (PATH) code, where particle acceleration at the shock and subsequent transport is followed numerically. By following single particle motion, quantities such as time intensity profiles, particle spectra, and other observables like Fe/O ratio and particle anisotropy can be obtained naturally from the model. In this work, we discuss our model and compare our model calculations with several individual events. These model calculations are very helpful in interpreting observations of particle data obtained in situ at 1 AU and those by STERO.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

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